daoduyluan-2174802010599

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[105]:
```
import pandas as pd
import matplotlib as plt
```

[106]:
```
data = [
    ["Alice", 25, 50000],
    ["Bob", 30, 60000],
    ["Charlie", 35, 70000],
    ["David", 28, 55000],
    ["Eva", 22, 52000],
    ["Frank", 45, 80000],
    ["Grace", 34, 72000],
    ["Hannah", 31, 68000],
    ["Ivan", 27, 61000],
    ["Jack", 29, 59000],
    ["Kelly", 33, 63000],
    ["Liam", 40, 77000],
    ["Mona", 26, 53000],
    ["Nina", 32, 66000],
    ["Oscar", 36, 75000],
]

df = pd.DataFrame(data, columns=["Name", "Age", "Salary"])
print(df)
```

```
      Name  Age  Salary
0    Alice   25   50000
1      Bob   30   60000
2  Charlie   35   70000
3    David   28   55000
4      Eva   22   52000
5    Frank   45   80000
6    Grace   34   72000
7   Hannah   31   68000
8     Ivan   27   61000
9     Jack   29   59000
10   Kelly   33   63000
11    Liam   40   77000
12    Mona   26   53000
```

```
13     Nina   32   66000
14    Oscar   36   75000
```

[107]:
```
#2
df.head(15)
```

[107]:
```
        Name  Age  Salary
0      Alice   25   50000
1        Bob   30   60000
2    Charlie   35   70000
3      David   28   55000
4        Eva   22   52000
5      Frank   45   80000
6      Grace   34   72000
7     Hannah   31   68000
8       Ivan   27   61000
9       Jack   29   59000
10     Kelly   33   63000
11      Liam   40   77000
12      Mona   26   53000
13      Nina   32   66000
14     Oscar   36   75000
```

[108]:
```
df_lonhon28 = df.query("Age > 28")
```

[109]:
```
print(df_lonhon28)
```

```
       Name  Age  Salary
1       Bob   30   60000
2   Charlie   35   70000
5     Frank   45   80000
6     Grace   34   72000
7    Hannah   31   68000
9      Jack   29   59000
10    Kelly   33   63000
11     Liam   40   77000
13     Nina   32   66000
14    Oscar   36   75000
```

[110]:
```
#bai4
Tb_salary = df['Salary'].mean()
print(Tb_salary)
```

```
64066.666666666664
```

[111]:
```
#bài5
Nhom_age = df.groupby('Age')['Salary'].sum()
print(Nhom_age)
```

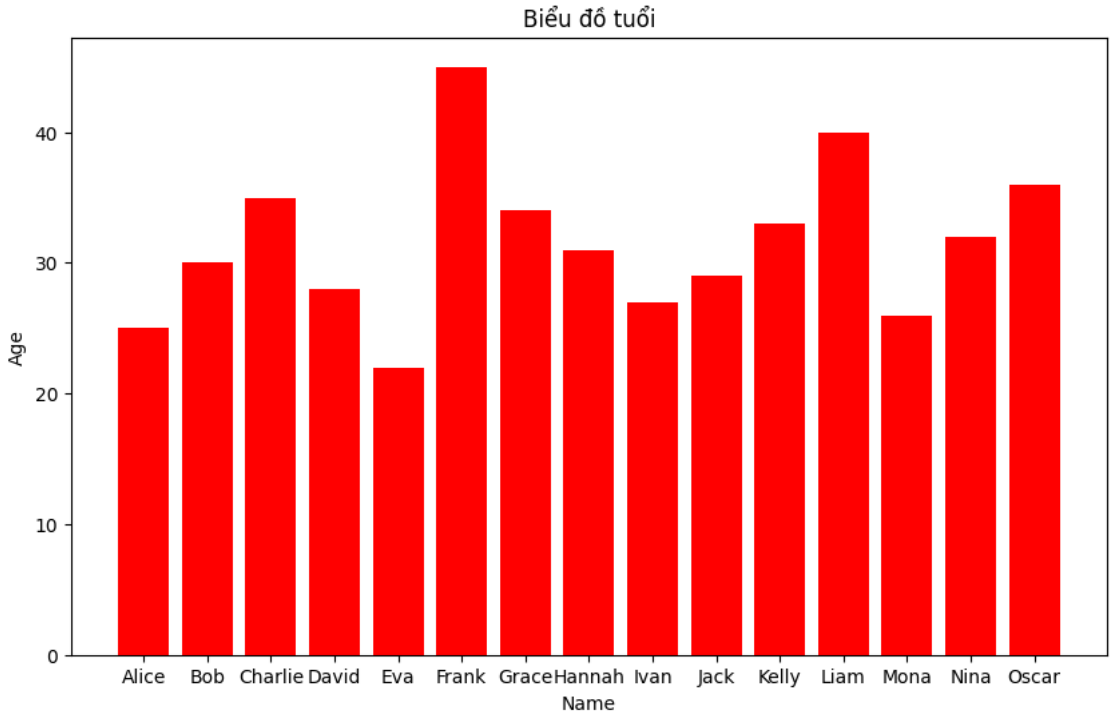
```
Age
22    52000
25    50000
26    53000
27    61000
28    55000
29    59000
30    60000
31    68000
32    66000
33    63000
34    72000
35    70000
36    75000
40    77000
45    80000
Name: Salary, dtype: int64
```

[112]:
```python
#bai6
df_giamdan = df.sort_values(by='Salary', ascending=False)
print(df_giamdan)
```

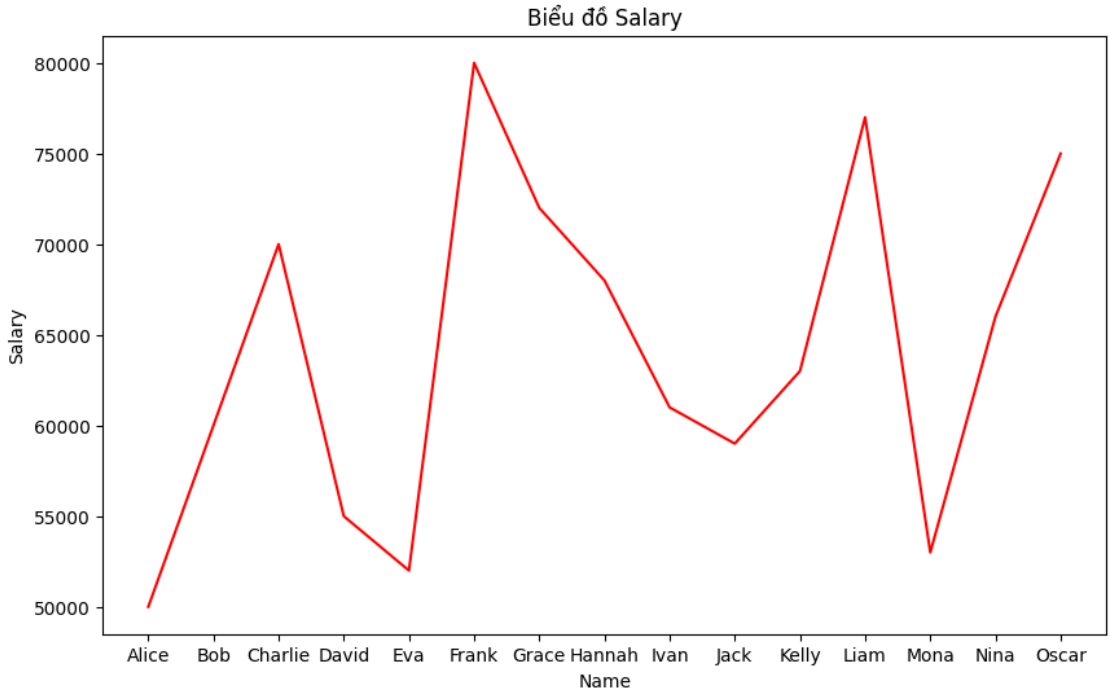
```
       Name  Age  Salary
5     Frank   45   80000
11     Liam   40   77000
14    Oscar   36   75000
6     Grace   34   72000
2   Charlie   35   70000
7    Hannah   31   68000
13     Nina   32   66000
10    Kelly   33   63000
8      Ivan   27   61000
1       Bob   30   60000
9      Jack   29   59000
3     David   28   55000
12     Mona   26   53000
4       Eva   22   52000
0     Alice   25   50000
```

[113]:
```python
#Bai7
import matplotlib.pyplot as plt
plt.figure(figsize=(10, 6))
plt.bar(df['Name'], df['Age'], color='red')
plt.xlabel('Name')
plt.ylabel('Age')
plt.title('Biểu đồ tuổi')
```

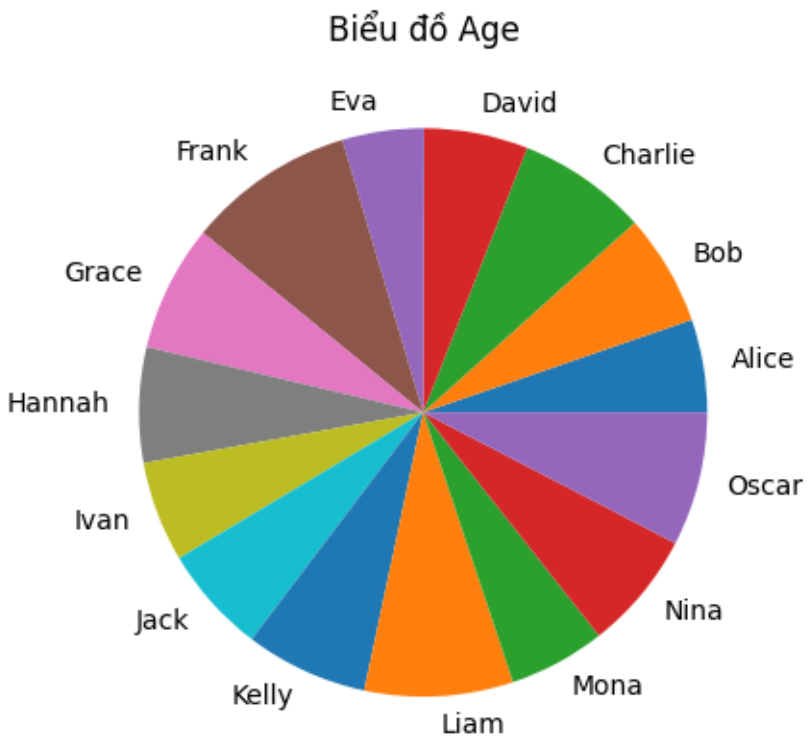
```
plt.show()
```



[114]:
```
#bai8
plt.figure(figsize=(10, 6))
plt.plot(df['Name'], df['Salary'], color = 'red')
plt.title('Biểu đồ Salary')
plt.xlabel('Name')
plt.ylabel('Salary')
plt.show()
```

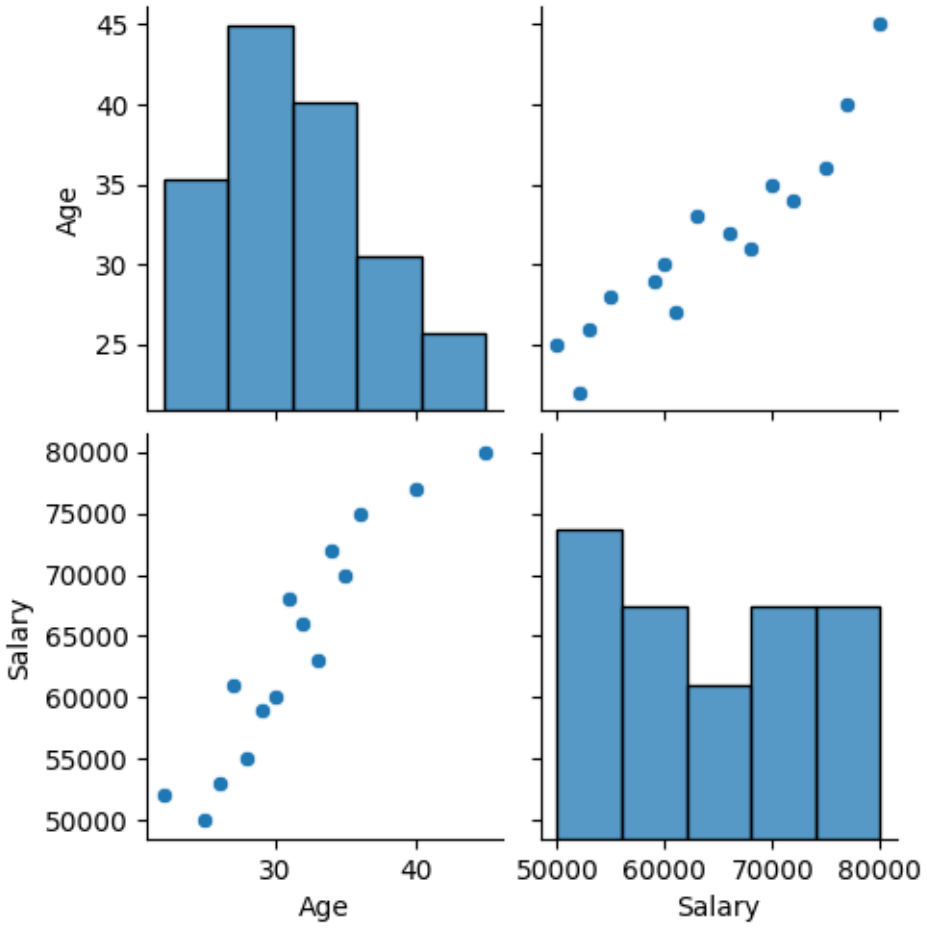


[115]:
```
#bài9
plt.pie(df['Age'], labels=df['Name'])
plt.title('Biểu đồ Age')
plt.show()
```



[116]:
```
#bài10
import seaborn as sns
phantan=df[['Age','Salary']]
sns.pairplot(phantan)
```

[116]: <seaborn.axisgrid.PairGrid at 0x1a6f2bad010>



[117]:
```
#Bài11
test= df.isna().sum()
print(test)
```

```
Name      0
Age       0
Salary    0
dtype: int64
```

[118]:
```
#Bai12
trB_age = df['Age'].mean()
df.loc[df['Age'] > 30, 'Age'] = trB_age
print(df)
```

```
      Name        Age  Salary
0    Alice  25.000000   50000
1      Bob  30.000000   60000
2  Charlie  31.533333   70000
```

```
3     David  28.000000   55000
4       Eva  22.000000   52000
5     Frank  31.533333   80000
6     Grace  31.533333   72000
7    Hannah  31.533333   68000
8      Ivan  27.000000   61000
9      Jack  29.000000   59000
10    Kelly  31.533333   63000
11     Liam  31.533333   77000
12     Mona  26.000000   53000
13     Nina  31.533333   66000
14    Oscar  31.533333   75000
```

```
C:\Users\PC\AppData\Local\Temp\ipykernel_7428\477502981.py:3: FutureWarning:
Setting an item of incompatible dtype is deprecated and will raise an error in a
future version of pandas. Value '31.533333333333335' has dtype incompatible with
int64, please explicitly cast to a compatible dtype first.
  df.loc[df['Age'] > 30, 'Age'] = trB_age
```

[119]:
```
#bài13
df['Age_normalized'] = (df['Age'] - df['Age'].min()) / (df['Age'].max() -␣
 ↪df['Age'].min())
print(df)
```

```
      Name        Age  Salary  Age_normalized
0    Alice  25.000000   50000        0.314685
1      Bob  30.000000   60000        0.839161
2  Charlie  31.533333   70000        1.000000
3    David  28.000000   55000        0.629371
4      Eva  22.000000   52000        0.000000
5    Frank  31.533333   80000        1.000000
6    Grace  31.533333   72000        1.000000
7   Hannah  31.533333   68000        1.000000
8     Ivan  27.000000   61000        0.524476
9     Jack  29.000000   59000        0.734266
10   Kelly  31.533333   63000        1.000000
11    Liam  31.533333   77000        1.000000
12    Mona  26.000000   53000        0.419580
13    Nina  31.533333   66000        1.000000
14   Oscar  31.533333   75000        1.000000
```

[120]:
```
#bài14
def sapxep_age(age):
    if age <= 30:
        return 'tre'
    elif 30 < age < 60:
        return 'trung nien'
    else:
```

```
        return 'gia'
df['age_group'] = df['Age'].apply(sapxep_age)
print(df)
```

```
      Name        Age  Salary  Age_normalized   age_group
0    Alice  25.000000   50000        0.314685         tre
1      Bob  30.000000   60000        0.839161         tre
2  Charlie  31.533333   70000        1.000000  trung nien
3    David  28.000000   55000        0.629371         tre
4      Eva  22.000000   52000        0.000000         tre
5    Frank  31.533333   80000        1.000000  trung nien
6    Grace  31.533333   72000        1.000000  trung nien
7   Hannah  31.533333   68000        1.000000  trung nien
8     Ivan  27.000000   61000        0.524476         tre
9     Jack  29.000000   59000        0.734266         tre
10   Kelly  31.533333   63000        1.000000  trung nien
11    Liam  31.533333   77000        1.000000  trung nien
12    Mona  26.000000   53000        0.419580         tre
13    Nina  31.533333   66000        1.000000  trung nien
14   Oscar  31.533333   75000        1.000000  trung nien
```

[121]:
```
#bài15
df['percentage'] = df['Salary'].pct_change() * 100
print(df)
```

```
      Name        Age  Salary  Age_normalized   age_group  percentage
0    Alice  25.000000   50000        0.314685         tre         NaN
1      Bob  30.000000   60000        0.839161         tre   20.000000
2  Charlie  31.533333   70000        1.000000  trung nien   16.666667
3    David  28.000000   55000        0.629371         tre  -21.428571
4      Eva  22.000000   52000        0.000000         tre   -5.454545
5    Frank  31.533333   80000        1.000000  trung nien   53.846154
6    Grace  31.533333   72000        1.000000  trung nien  -10.000000
7   Hannah  31.533333   68000        1.000000  trung nien   -5.555556
8     Ivan  27.000000   61000        0.524476         tre  -10.294118
9     Jack  29.000000   59000        0.734266         tre   -3.278689
10   Kelly  31.533333   63000        1.000000  trung nien    6.779661
11    Liam  31.533333   77000        1.000000  trung nien   22.222222
12    Mona  26.000000   53000        0.419580         tre  -31.168831
13    Nina  31.533333   66000        1.000000  trung nien   24.528302
14   Oscar  31.533333   75000        1.000000  trung nien   13.636364
```

[122]:
```
#Bài 16
df.drop_duplicates(subset=['Name','Age', 'Salary'])
print(df)
```

```
      Name        Age  Salary  Age_normalized   age_group  percentage
0    Alice  25.000000   50000        0.314685         tre         NaN
```

1	Bob	30.000000	60000	0.839161	tre	20.000000
2	Charlie	31.533333	70000	1.000000	trung nien	16.666667
3	David	28.000000	55000	0.629371	tre	-21.428571
4	Eva	22.000000	52000	0.000000	tre	-5.454545
5	Frank	31.533333	80000	1.000000	trung nien	53.846154
6	Grace	31.533333	72000	1.000000	trung nien	-10.000000
7	Hannah	31.533333	68000	1.000000	trung nien	-5.555556
8	Ivan	27.000000	61000	0.524476	tre	-10.294118
9	Jack	29.000000	59000	0.734266	tre	-3.278689
10	Kelly	31.533333	63000	1.000000	trung nien	6.779661
11	Liam	31.533333	77000	1.000000	trung nien	22.222222
12	Mona	26.000000	53000	0.419580	tre	-31.168831
13	Nina	31.533333	66000	1.000000	trung nien	24.528302
14	Oscar	31.533333	75000	1.000000	trung nien	13.636364

[123]:
```
#Bài17
df.to_csv('baikiemtraso1.csv', index=True)
```